*December 1969-January 1970*

# EMO

*The Threat to North America*

*The Threat to Canada*

*Ministerial Statement to 1969 Conference*

*Hurricane Camille—Part II*

*Civil Defence in Finland*

CANADA EMERGENCY MEASURES ORGANIZATION

# EMO
# NATIONAL DIGEST

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*Editor:* A. M. STIRTON

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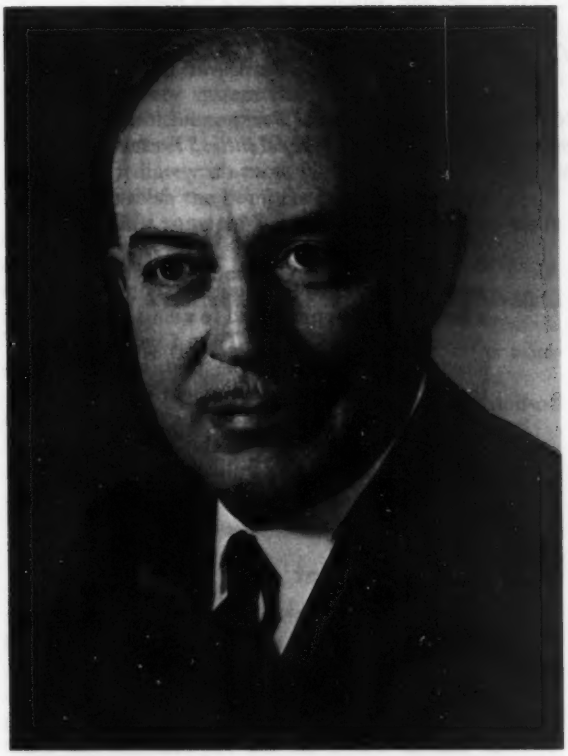

*I would like to take this opportunity to join the National Coordinator, Civil Emergency Measures, officers, and staff of Canada Emergency Measures Organization in wishing readers and contributors a happy and successful New Year.*

Léo Cadieux

HONOURABLE LÉO CADIEUX
Minister of National Defence

# THE THREAT TO NORTH AMERICA

*The following evaluation of the attack threat against North America was extracted from a paper presented to the Standing Committee on External Affairs and National Defence by General F. R. Sharp in May, 1969 (Minutes of Proceedings and Evidence, No. 41, dated 6 May). At that time Gen. Sharp was Deputy Commander-in-Chief, North American Air Defence Command. He has since been promoted and appointed Canadian Chief of the Defence Staff.*

*Other sections of General Sharp's paper on NORAD included: Historical Background; Current NORAD Organizational Arrangements; Summary of Current NORAD Capabilities; Present Forces; and Possible Improvements in Air Defence.*

## The Threat

The nation which poses the most serious threat to North America is the USSR. It is estimated that the Soviet Union will have achieved numerical parity with the U.S. in land based intercontinental ballistic launchers by mid-1969 and will have a larger inventory than the U.S. by 1970. This will permit them to plan on the basis of strikes against more targets and provide them increased assurance of destruction of their present targets if deterrence fails and intercontinental nuclear war were to occur.

The size and character of the threat has changed very significantly since the inception of NORAD in 1958. The emphasis has shifted from a solely bomber threat in 1958 to a massive missile and a limited but still significant bomber threat in 1969. However, the nature of the bomber threat is changing from that of the 'free fall' bomber to that of the air to surface missile carrier with improved survivability and stand off strike capability of several hundred miles.

Although there is still no evidence of Soviet introduction of a new bomber of intercontinental range in the early 1970s, improvements in the present force continue to be noted. For example, sophisticated electronic counter measures are now employed to complicate the air defence problem.

Analysis of the threat to North America reveals the following:

a. The Soviet Union has between 950 and 1000 ICBM launchers operational including a significant number of SS 9 which can carry a warhead in excess of 20 megatons and is the missile on which the Soviets have been testing Multiple Re-entry Vehicles.

b. Until now, the Soviet Union has had about 45 ballistic missile launch tubes in their nuclear powered submarine force, but a new class of submarine having 16 missile tubes is in series production. It is expected to have the capability of firing a missile of 1500 miles range and thereby markedly improve Soviet strike capabilities.

c. As of now, the Soviet Union has about 150 subsonic jet and turbo prop bombers of intercontinental range. About half of these are equipped with air to surface missiles, one per aircraft. These bombers have a two-way mission capability to any target in North America. The Soviets also have about 700 medium bombers which are believed to be targetted on Eurasia, but a few might be committed to an attack on North America. In a "Greater Than Expected Threat" situation it is conceivable that something less than half of these bombers might be used on one-way missions, but in view of the growth of Soviet ICBM/SLBM capabilities this is not considered very probable. In this unlikely case the obvious targets would be in Hawaii, Alaska and Canada.

## The Bomber Threat

Developments during the past decade such as the airborne alert concept for Strategic Air Command bombers, the maintenance missiles in hardened silos, and the U.S. Polaris submarines have eased the requirement to protect the deterrent forces of the U.S. from bomber attack. However, the requirement for these defences has by no means been eliminated. The manned bomber continues to be the cheapest and most effective means for delivery of nuclear weapons. The recent increase in Soviet training flights to the periphery of North America seems to suggest a renewed interest in this means of attack. It is generally more accurate than a missile, can carry a larger payload and is more flexible. Moreover, the effectiveness of the bomber increases in inverse proportion to the effectiveness of the defences against it. If North America anti-bomber defences were eliminated altogether the megatonnage which the USSR would be able to deliver in an attack would be greatly increased.

In addition, any other country with a nuclear capability would be able to launch an effective attack against the U.S. and Canada with relatively cheap and unsophisticated delivery systems.

Thus, NORAD's defences serve to "put up the price of admission" by forcing a would-be attacker to either concentrate all his weapons against fewer targets, or to produce more sophisticated and expensive delivery systems in an attempt to circumvent the defences.

The Minister of National Defence speaking in Ottawa on 27 January 1969, expressed the need for continuing anti-bomber defences in this way, quote:

"Let us look more closely at the place of the bomber

in the strategic system. At the moment, the superpowers find it more economical to concentrate offensive capability in intercontinental and submarine-launched missiles. But why is this so? Simply because effective defence against bombers is feasible and both sides maintain such defences—just enough to discourage the other side from investing in the cheaper and more accurate delivery system that bombers represent.

"What would happen if one side abondoned its bomber defences? In all likelihood, the other side would immediately do most of the following things:

- Refurbish the bombers it still has in service.
- Modify some of its transport aircraft to carry bombs.
- Build more bombers.
- Perhaps use tankers and heavy tactical aircraft as bombers.
- Remove the jamming equipment from its bombers and replace it with more bomb racks.
- Forget about using load-limiting stand-off missiles, and finally
- Target to cities intercontinental missiles which had previously been aimed at air defence facilities.

The balance would be quickly distorted to a much greater degree than that implied by the original "bomber threat".

"One side would have available an inexpensive offensive system, which would threaten both the population and the land-based second strike forces of the other. Any movement toward such a situation would be destabilizing and must be discouraged. Thus, air defence will be needed as long as bombers represent either an existing or a potential threat to second strike forces.

Because of our geography, it is doubtful that the United States could, in the foreseeable future, maintain an air defence system adequate to meet the requirements I have just reviewed, unless there is close and active cooperation from Canada. If we made life difficult for the United States in its endeavours to establish adequate air defences, we would only make the nuclear balance less stable. Such behaviour on Canada's part would be acting against Canada's own security interests. Canada's defence cooperation with the United States has developed by a series of carefully negotiated agreements, arising out of the joint pronouncement of Prime Minister King and President Roosevelt at Ogdensburg in 1940. NORAD is an important example of such cooperation, and has served Canada well. In my view, NORAD is still important to Canada's security."

## The Ballistic Missile Threat

In relation to its responsibility for warning, NORAD carries out certain tasks with regard to the detection of ballistic missiles and sub-launched ballistic missiles. At present a good capability exists to detect and determine the intention of any ICBMs launched over the polar regions. This capability is provided by the Ballistic Missile Early Warning System (BMEWS) located in three sites at Clear, in Alaska, Thule, in Greenland, and Fylingsdale Moor, in England. These sites were established between 1960 and 1963 by the United States at a cost of approximately $920 million dollars. The sites at Clear and Thule are operated by U.S. personnel and the site at Fylingsdale Moor is under the operational control of the Royal Air Force.

The BMEWS sites consist of radar scanners and trackers which have the capability of constantly probing space for possible missile launches. The warning capability of the BMEWS is between 15 and 20 minutes. The information gleaned by the BMEWS sites is sifted and correlated by a computer system and relayed automatically to the computers in the NORAD Cheyenne Mountain complex at Colorado Springs, over cables and radio circuits, much of them through Canada. At the NORAD Combat Centre the data is processed by the NORAD computers and displayed instantaneously. Processed warning information is passed to all user agencies such as National Defence HQ in Ottawa, the National Military Command Centre in Washington, SAC, SHAPE, RAF Headquarters, etc.

In addition to the BMEWS system the United States Air Force in modifying seven of its coastal radars to provide a detection and warning capability against submarine-launched ballistic missile attack. This new system employs modified radars which are capable of both searching and tracking and can detect any missile launched or approaching within several hundred miles of the Canadian and U.S. coastlines. As is the case with BMEWS, the computers at the radar sites can calculate the launch and impact points for any detected missiles which appear to be a threat and automatically transmit the threat message to the NORAD Combat Operation Centre.

In summary, NORAD has a capability to detect, identify and give warning of ICBM and SLBM attacks against the North American continent. NORAD does not, however, have any capability to intercept or destroy ballistic missiles. The preservation of the retaliatory force, through hardened Minuteman sites, Polaris submarines and airborne SAC bombers, has been considered the best counter against any ballistic missile attack and a sufficient deterrent to a preemptive first strike.

## The Space Threat

It has been known for some time that the USSR has been developing a space vehicle which could have a "fractional orbital bomb" capability. Although there is no indication as yet that such a weapon is being deployed, NORAD must be alert to all possibilities and have the capability of providing warning of any space events that occur.

The Space Detection and Tracking System consists of a network of radar, radio and optical sensors concentrated in the northern hemisphere supplying data to the NORAD Space Defense Center on orbiting satellites. The system is multi-service, composed of USAF, US Navy and Canadian Armed Forces sensors (the Canadian input is a Baker Nunn Camera located at Cold Lake, Alberta) along with a number of civilian scientific agencies which contribute data on a co-operative basis. A computerized master catalogue of space vehicles—payloads and debris—is maintained by the Space Defense Center in the NORAD Combat Operations complex in Cheyenne Mountain. The center also determines orbits of space objects, keeps a schedule of their positions, predicts their future positions, and predicts the time and general location of their re-entry into the earth's atmosphere, Even after precise data are established on a satellite position, surveillance of the object must continue to ensure updating of the orbital information. More than 12,000 observations are made daily on approximately 1600 objects by the sensor network and are processed by space object identification experts using both computer and hand processed data. Orbital information on satellites of interest to NORAD is fed into the data base of the computers which support the NORAD Combat Operations Center and is presented in constantly up-dated displays for the CINC and his staff.

## Potential Evolution of the Threat

The threat of a bomber attack will continue to exist as long as the USSR maintains a significant bomber force. Such a force exists today and probably will continue to exist for the next decade. What is less certain is whether the Soviet Union will develop and produce a new supersonic bomber to supplant the existing force. A technological capability to place such a bomber into production has been demonstrated by the recent flight of the Tupolev 144 supersonic transport aircraft. One of the objectives of a manned bomber defence is to discourage Soviet bomber development.

The threat of a ballistic missile attack is increasing as the Soviet Union increases its inventory of intercontinental ballistic missiles and submarine-launched submarine ballistic missiles.

It is hoped that all nations will abide by the provisions of the treaty banning the stationing of weapons of mass destruction in outer space since it is within the present state of space vehicle technology to develp orbital satellites which can carry several nuclear warheads. At present there is no method by which such satellites could be identified as hostile and, therefore, warning of an attack would not be available. However, if such a threat were to develop, it is very likely that methods could be developed to identify possible hostile objects and provide a means to destroy them. ▲

# THE THREAT TO CANADA

*by*
*S. N. White*

*Director General, Long Range Planning and Policy Development,*
*Canada Emergency Measures Organization*

Based on a total military and research evaluation of the current threat to Canada. I hope to indicate to you how that threat evaluation appears when looked at through the eyes of a civil emergency planner.

What we are concerned about in civil emergency planning is of course the implementation of the threat, or the delivery and detonation of nuclear weapons on Canadian territory. To be more precise we are concerned about the after effects which those weapons will produce and the areas of Canada likely to be affected. This leads us to consideration of how an enemy might look at Canada, bearing in mind that his objective would be to win a war.

We believe that to achieve this objective he will direct this attack against any one, or any combination of, the following four major systems:

- the defence forces and their vital installations;
- the population of Canada;
- government centres and government control mechanisms;
- those national resources which would be required in the early stages of any war.

When we look at these four plausible strategic aims, we cannot help being impressed with the fact that three of the systems are entirely civilian in character, and the fourth, the defence forces and their installations, by virtue of the general proximity of military bases to civilian communities, places those communities at considerable risk. This is the first impact which a look at the threat produces, namely that for the first time in our history, very considerable segments of the Canadian population and of Canadian real estate and property are at risk to an extremely high degree of disruption or destruction.

**BLAST DAMAGE RANGES**

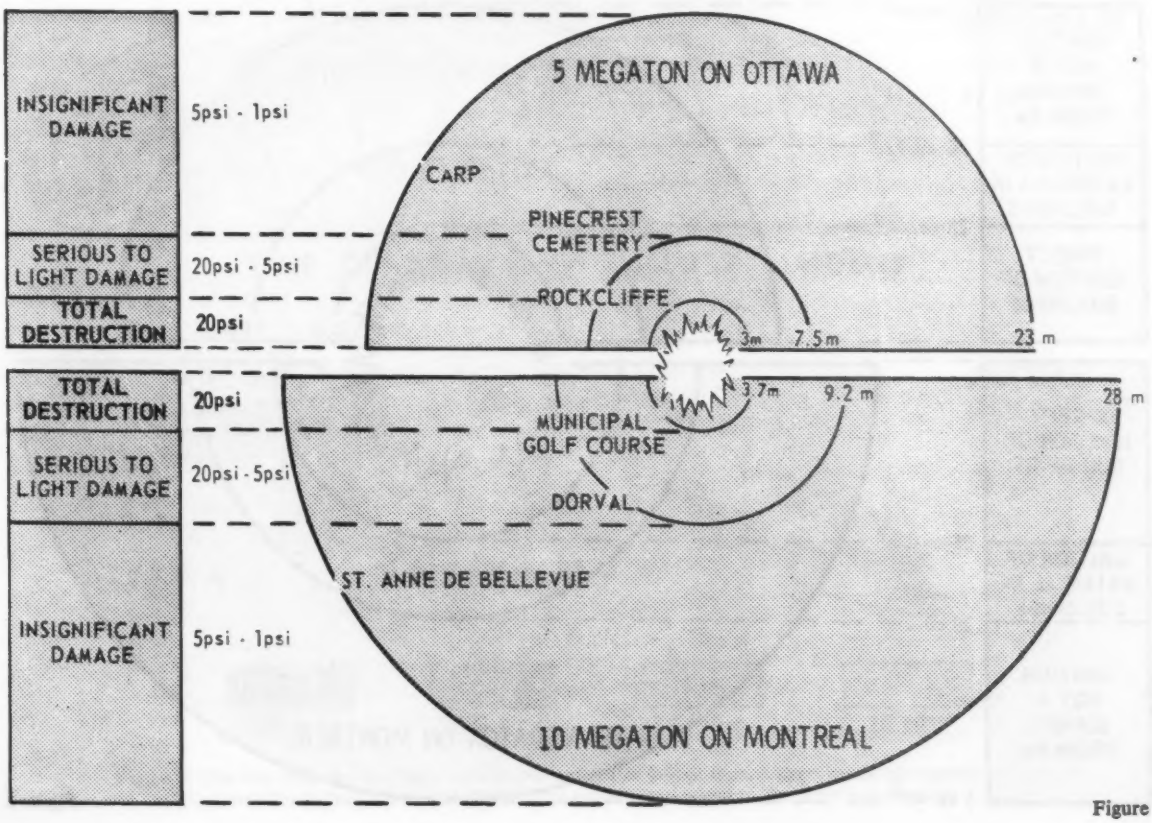


Figure 1

## Weapon Effects

The next point which the civil emergency planner has to take into account is the extent of the area associated with each nuclear detonation over which the effects of that weapon will be felt. There are four basic effects to be considered and each produces its own range of problems for those who seek to develop protection against it. These effects are blast, fire, initial radiation, and residual radiation.

## Blast

The extent of blast damage depends upon the size of the bomb and on the height at which it has burst. Generally speaking blast effects in terms of overpressure levels can be portrayed as concentric rings around ground zero. (Figure 1). However, in practice as a result of topographic variations, and the energy absorbed by the destruction of buildings, the rings may become irregularly shaped. For planning purposes we tend to look on the blast pattern as consisting of three zones: one in which the majority of buildings will be totally destroyed; one in which they will have suffered only light damage, and an area in between in which varying amounts of repair may be necessary. Overpressures which create such tremendous destruction can and will obviously cause very serious casualties to personnel unless they are suitably protected. There are some 10.8 million Canadians who live in areas which may be subjected to this type of effect.

## Fire

The thermal effects of a nuclear weapon are capable of setting fire to combustibles at considerable ranges from ground zero, and they can, therefore, cause the development of very serious conflagrations in built-up areas. An example of the fire capability is shown at Figure 2. As with the blast effects, the thermal radiation can also cause very significant casualties in the form of second and third degree burns.

## Initial Radiation

The initial radiation which is released at the time of the burst takes the form of neutron energy and gamma radiation with a very high energy rating. The intensity of this radiation by itself would be sufficient to cause severe casualties, but the range is relatively short

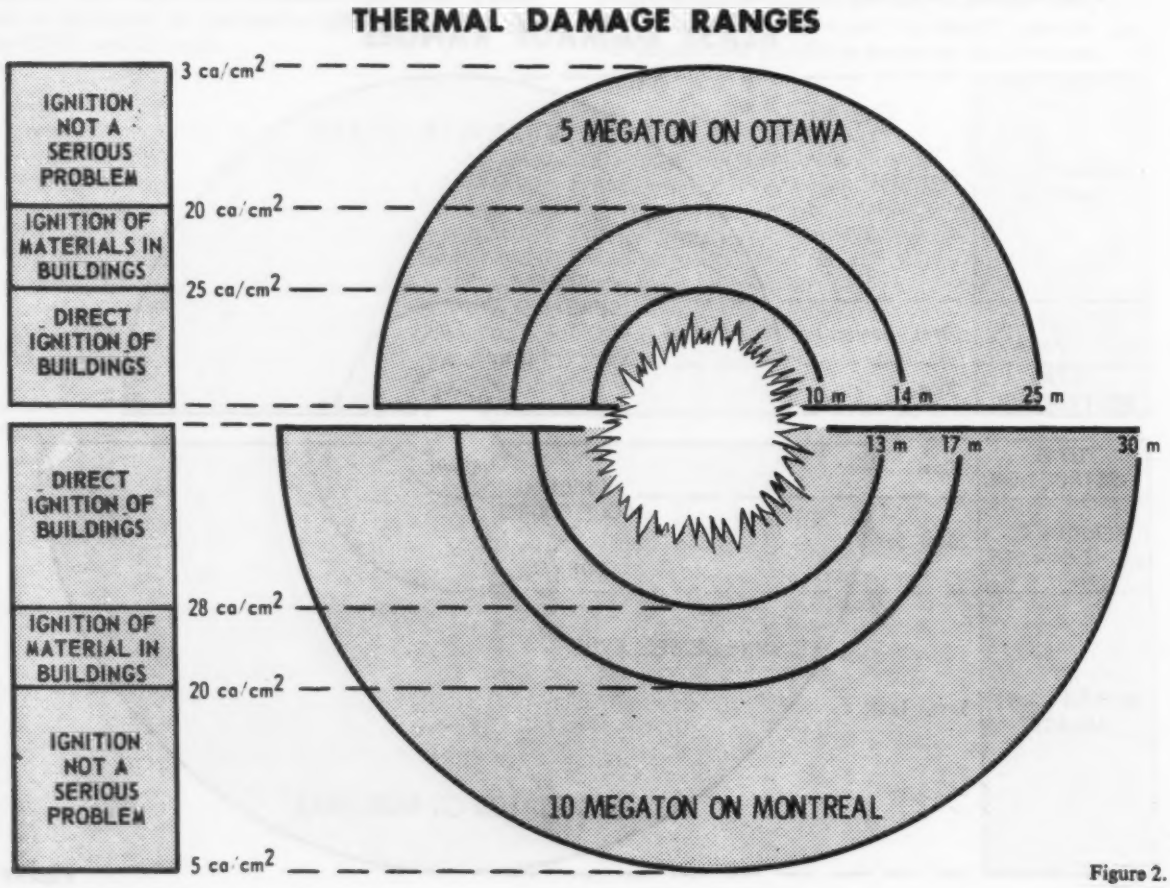


Figure 2.

compared to that of the blast and thermal effects, thus a person exposed to initial radiation would also be exposed to potential lethal blast effects and thermal radiation causing third degree burns.

## Residual Radiation

Residual radiation is more commonly referred to as fallout. It travels many miles downwind of a nuclear explosion. As one would expect, the intensities of residual radiation tend to be higher closer to ground zero, diminishing as the distance from ground zero increases. (Figure 3). The area of land subjected to fallout is dependent upon the meteorological conditions prevailing at the time of detonation and since winds may be blowing towards any point on the compass, it is practically impossible to predict areas which will actually be subjected to fallout. We do know, however, that 90% of the time, the direction of the winds in Canada lies within an arc of approximately 90-120 degrees, centred on a west/east direction.

The implication of this weather pattern is that many more citizens must consider themselves at risk to fallout from each potential detonation than will actually be exposed once it has occurred. However, in areas where there are a number of potential targets, both in Canada and adjacent to them in the United States, for example Quebec, and the Atlantic provinces, Southern Ontario, the potential area at risk is quite immense and virtually covers the entire southern part of the Province.

## Summary

To sum up these statements, the civil emergency planner has to consider that, within the cities of Canada which may be exposed to enemy attack, there are 10.8 million Canadians for whom there is today, no adequate protection against the direct weapon effects of blast fire, initial radiation, and that this is further aggravated by two factors. First, that growing stockpiles of enemy weapons enables him, if he wishes, to attack

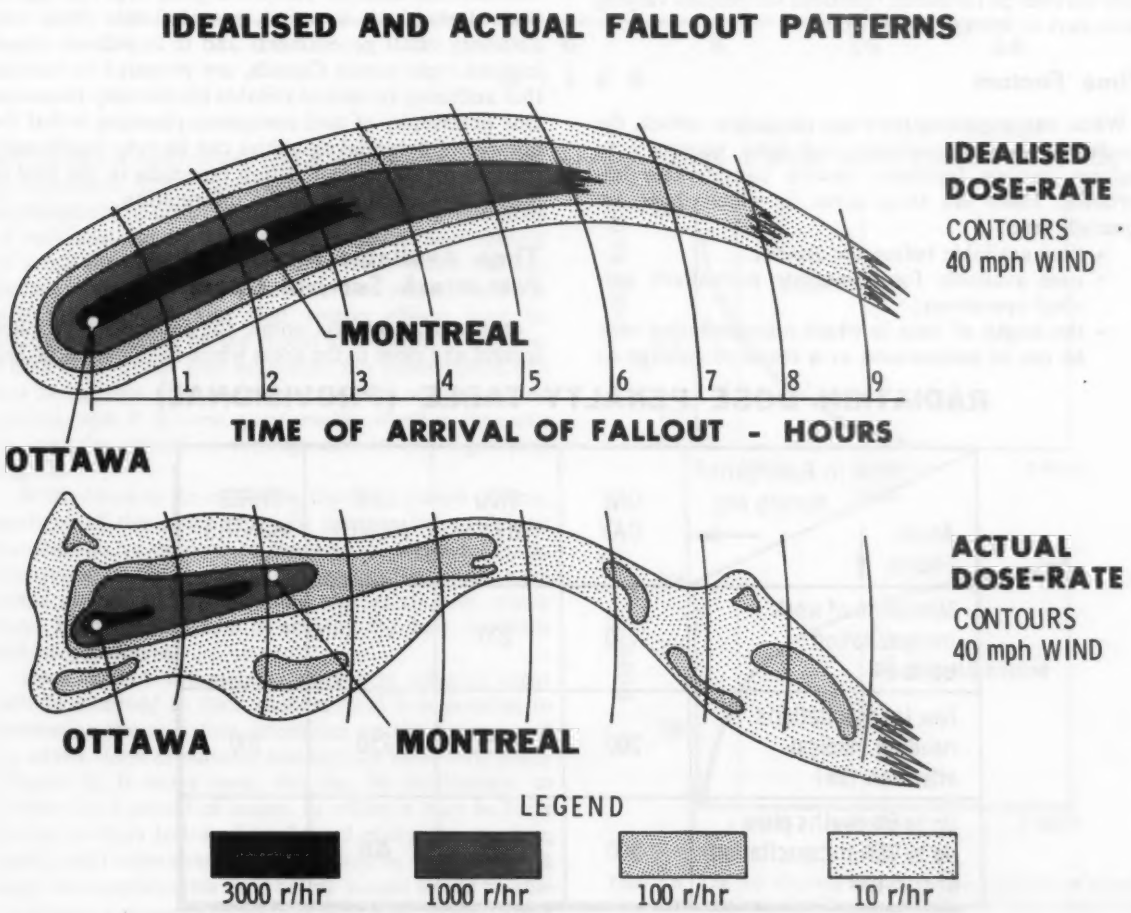


Figure 3. The top diagram illustrates an idealized pattern of fallout from a hypothetical detonation on Ottawa. The lower illustration shows an actual fallout pattern transposed to the same ground zero.

more Canadian cities than we now consider plausible or alternately, to deliver more weapons into the major centres of population. The second factor is that the trend towards urbanization in Canada, each year places a greater proportion of the Canadian public at risk to these weapons.

With regard to the areas which are subject to fallout the vagaries of wind and weather, mean that almost all the rest of inhabited Canada is at some risk, though it is possible to sub-divide the area into high, medium and low risk zones.

It goes without saying that in the areas which have been subjected to direct weapon effects, there will be damage to structures of all types; to buildings, bridges, power transmission lines, utility systems, and industrial processes in a highly significant degree. Many of our essential services may be brought to a grinding halt and other disrupted for significant periods of time. Furthermore, because of high intensities of fallout in areas adjacent to targets, people may not be capable, because of high radiation intensities, of performing their survival or industrial functions for periods varying from days to weeks (Figure 4).

## Time Factors

When one considers the risks of nuclear attack, the questions of time available and time necessary to perform various functions assume considerable importance. There are three areas in which these are especially true:

- time available before the attack;
- time available for immediate post-attack survival operations;
- the length of time in which an installation may be out of commission as a result of damage to it, or the inability of individuals to work in a high radiation environment—we call this the time of denial.

## Warning Time

The current state of international relationships certainly does not create any alarm in the minds of the public or encourage the desire to seek civil defence information. Any high pressure program to encourage the public to take significant steps which would contribute to their personal security and safety is likely to meet with only limited success. However, in the period of an escalating international crisis we know from past experience that the public will be much more concerned about the effects of war and will seek, demand, and be receptive to advice on suitable preparatory measures. Fortunately, the current philosophy on strategy indicates that a sudden all-out nuclear attack is much less likely than heretofore, and war if it comes, is more likely to come at the end of a period of increasing international tension. There is a great deal that can be done during such a period, provided that those with authority in all governments and in important organizations right across Canada, are prepared to exercise that authority to initiate suitable preparatory measures. One philosophy of civil emergency planning is that the number of potential casualties can be very significantly reduced by taking such action especially in the field of public protection and public information.

## Time Available for Immediate Post-attack Survival Operations

Once an attack has come, the immediate problem around and close to the areas which have been attacked

**RADIATION DOSE PENALTY TABLE (PROVISIONAL)**

| Dose in Roentgens during any → / Acute Effects ↓ | ONE DAY | TWO WEEKS | ONE MONTH | THREE MONTHS |
|---|---|---|---|---|
| Minimum of work incapacitation up to 5% | 150 | 200 | | |
| Few incapacitations needing medical attention (5%) | 200 | 215 | 250 | 300 |
| Up to 5% deaths plus up to 95% incapacitation of survivors | 300 | 325 | 400 | 600 |

**Figure 4. This is a table indicating the consequences of exposing people to various doses of radiation within the time shown. IT IS NOT A TABLE OF PERMISSIBLE DOSES.**

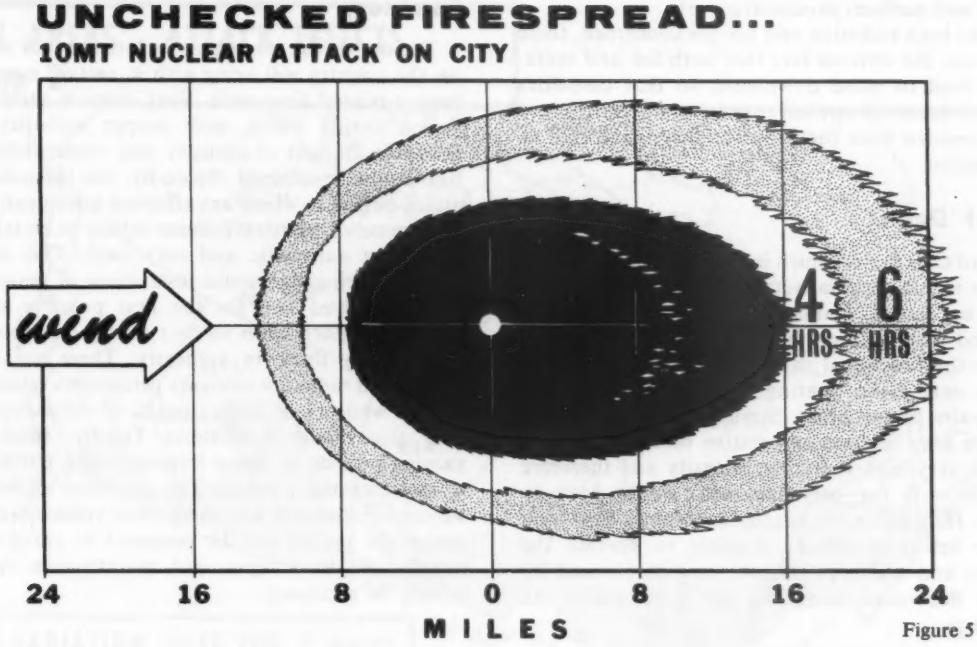


Figure 5

will be that of survival and rescue. Here time is extremely important. These operations will be affected by the development of fire in target areas, and by the intensities of radiation. Figure 5 shows the potential development of a fire situation in a target area from which one can deduce that the time available for rescue may be extremely limited and that rescue efforts may be severely hampered by the extent and spread of the fire. There is no doubt that municipal fire departments will not be capable of extinguishing all fires which may be ignited, and it is even questionable whether they can prevent the spread of conflagration to any significant degree.

With regard to the radiation, there is a period of time, perhaps of the order of 15-20 minutes before fallout commences to descend in the area of the detonation. Survivors in lightly damaged areas, therefore, have some chance of extinguishing any small fires which have been ignited, and of seeking the best available fallout protection.

Once fallout commences, people in affected areas will be confined to their shelters until it is possible to determine the radiation intensities on the ground and to advise them of suitable conduct for their own safety (Figure 6). In some cases, this may be confinement to shelter for a period of hours; in others it may be for a period of days followed by limited excursions outside, and in still others the intensities may be so high that it may be a considerable time before people would be able to resume a normal existence in their area. In such areas the population may have to be removed to places of lower intensities where they can have greater freedom

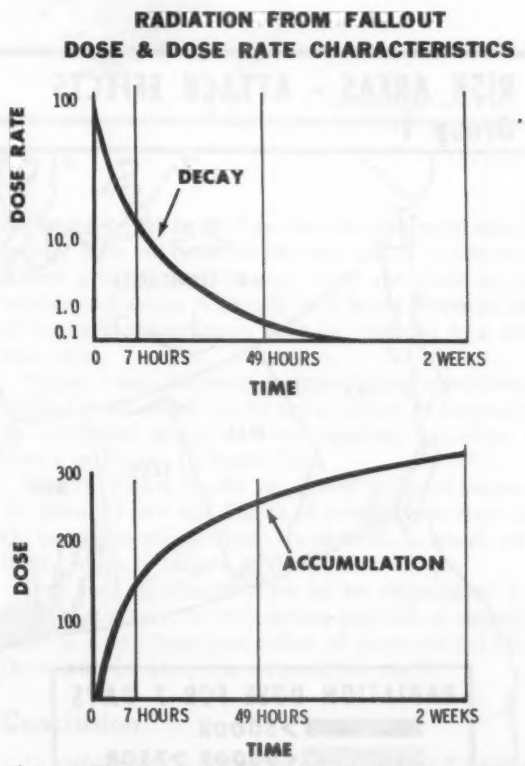


Figure 6. The top diagram shows that the intensity of radiation declines very significantly in the first 49 hours and the bottom diagram indicates the high percentage of dose which would be accumulated during the same period, and from which people should be protected whenever possible.

of action and perform productive work.

As far as both radiation and fire are concerned, there is, of course, the obvious fact that both fire and radiation will tend to move downwind, so that casualties which have occurred upwind may have a better chance of being rescued than those on the downwind side of the detonation.

## Time of Denial

The third time factor which is important is the length of time in which essential services, utilities, industries, etc., will be denied. Damage may very well be only partial, and what is important is how long it will take to restore the functional capability of an installation. This may only mean clearing debris and performing minor repairs to machines. Similarly, an undamaged installation may become inoperative because it lies in an area of very high radiation intensity and therefore will not be safe for personnel who would have to operate it. Here again, the significant time is how long it will be before it will be possible to operate the installation and whether this time may be reduced by physically decontaminating the structure and/or its surroundings.

## Summary

To sum up the important factors are that any attack on the country will bring with it, certain events which have a related time scale. First, there is the pre-attack period during which, with proper authority, a considerable amount of casualty and vulnerability reduction could be affected. Secondly, the immediate post-attack period in which any effective action can be taken is extremely limited. Whatever action to be taken must be almost automatic and very swift. This automatic response demands careful instruction of persons likely to be involved and for the best possible system of gathering information so that timely decisions can be executed by those in authority. There are both fire spread and radiation intensity perameters related to this factor, while close to the point of detonation debris may also hinder operations. Thirdly, there will be varying periods of denial imposed upon parts of many of our essential services. The corollary of this is that we must endeavour to reduce their vulnerability in the pre-attack period and be prepared to carry out very rapidly, whatever repair and maintenance operations as may be necessary.

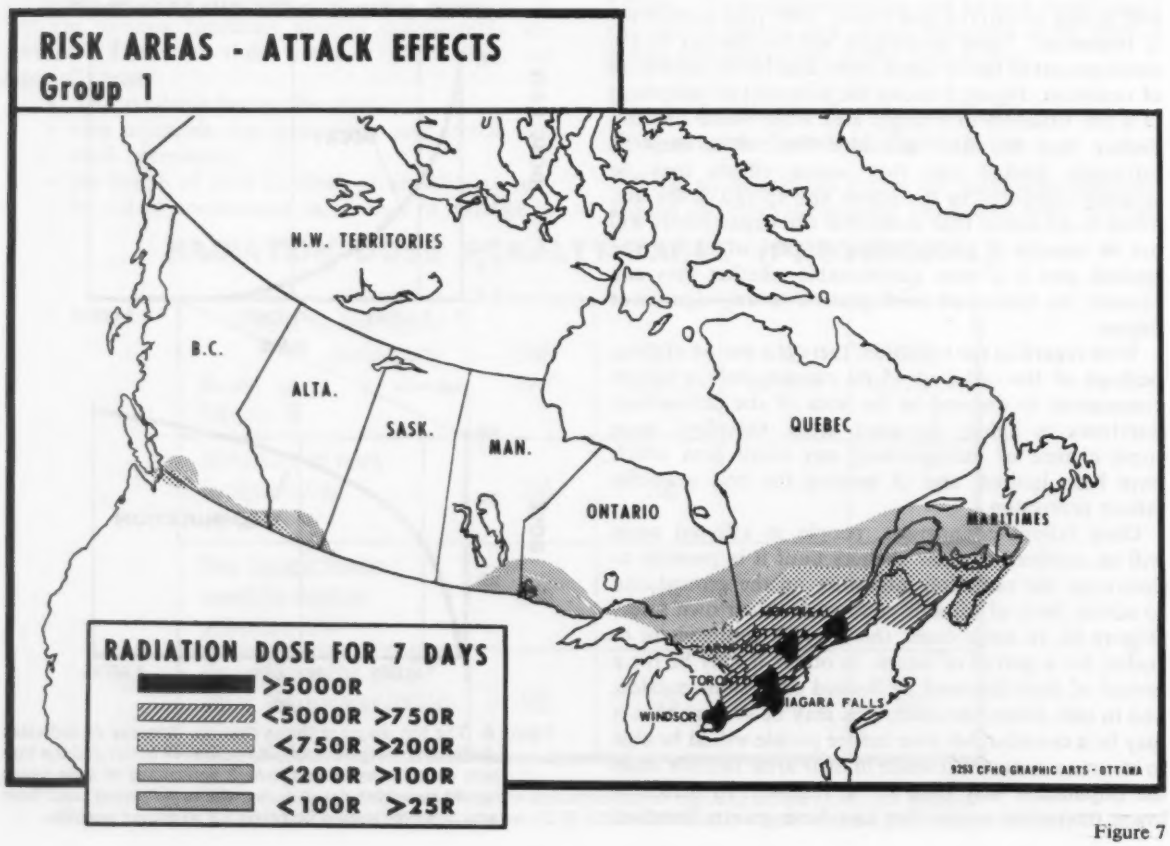


Figure 7

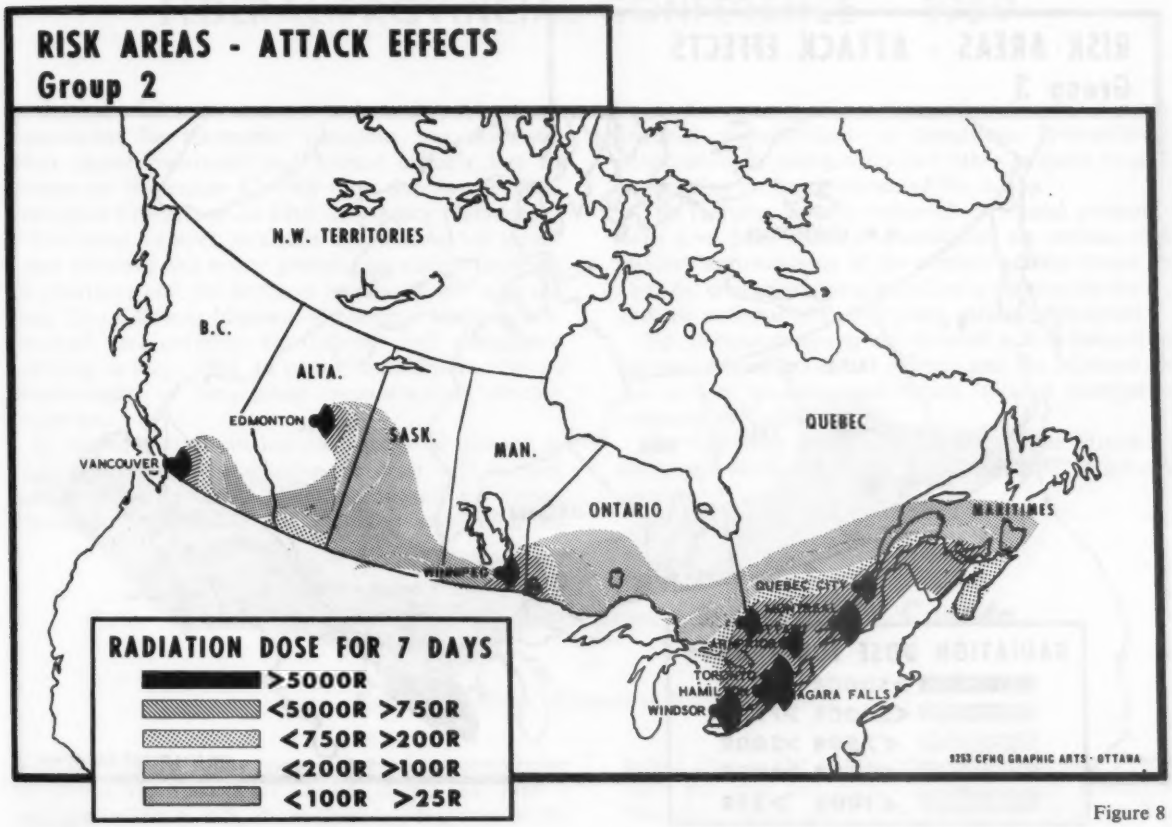


Figure 8

## Casualties from Various Attacks

There are many ways of preparing lists of potential Canadian targets. Fundamentally they all consist of allocating a number of points relative to their importance in the four systems referred to in Paragraph 3. Following this procedure and arranging the potential targets in the consequent order of precedence, one is still left with the almost indeterminate problem of deciding how far down the list an enemy will go in selecting targets for actual attack. Some idea of the relevant significance of various weights of attack upon Canada can be obtained by dividing the potential target list into groups and as a result, estimating the changes resulting from an escalation in the weight of attack. Figure 7, illustrates the general fall-out conditions which would exist in Canada following an attack on the first group of selected Canadian targets together with the fallout eminating from a comparable weight of attack on the United States of America. The fallout pattern shown is that for a particular set of meteorological conditions and should not, therefore be taken as an average or probable pattern. It is intended purely for illustrative purposes. The casualties which would occur from this weight of attack are shown at Figure 10 Index One. They have been computed on the basis of an absolute minimum warning period, little or no preparations, and a minimum of fallout protection. However, since the state of civil defence in Canada is already in a better prepared state of readiness these figures must be regarded as a worst case only.

Figure 8 uses the same meteorological conditions as applied to an attack on the earlier group of targets plus an additional group and the resulting casualties are shown in Figure 10 Index Two.

Finally, Figure 9 adds yet a third group of targets to the previous two and Figure 10 Index Three represents the casulaties which would result from an attack on all three groups of targets.

One very significant point to be emphasized from this is that despite the very serious numbers of casualties, there is a very high proportion of survivors for whom there must be adequate preparations made.

## Conclusion

In conclusion, I would like to say that I have not addressed myself at all to the probability of Canada being attacked, but rather, since that probability can never be zero, to the consequences and effects of such an attack. These have been neither minimized nor

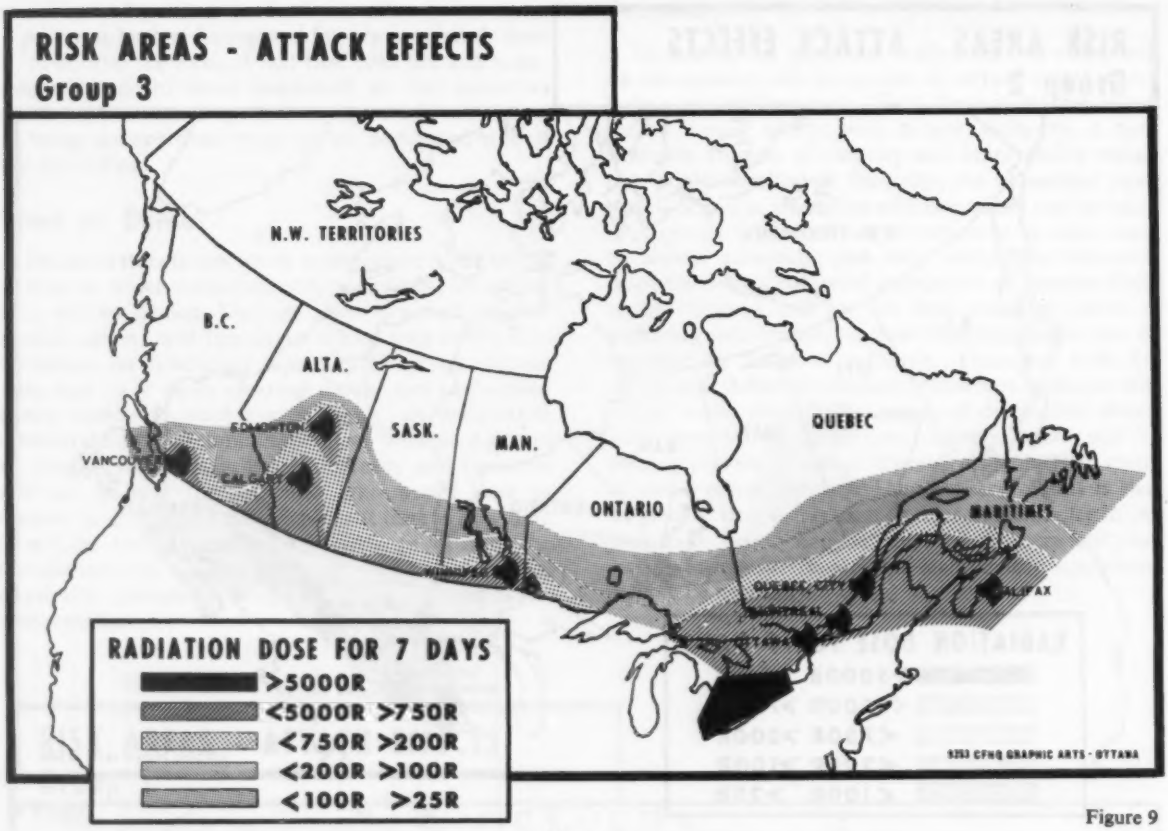


Figure 9

exaggerated and are well within the enemy capability. Therefore, as long as there is any threat to Canada at all civil emergency planners must work towards meeting the serious situations which can and may arise. ▲

## CASUALTIES (MILLIONS)

| TARGET PROBABILITY YIELD | INDEX ONE 100 MT | INDEX TWO 160 MT | INDEX THREE 200 MT |
|---|---|---|---|
| UNAFFECTED | .1 | .2 | .2 |
| AFFECTED | 5.1 | 7.5 | 8.5 |
| KILLED | 4.6 | 6.9 | 7.8 |
| INJURED | .5 | .6 | .7 |

Figure 10

# FEDERAL-PROVINCIAL CONFERENCE – 1969

Planning by federal, provincial and municipal levels of government for emergency situations was discussed when senior provincial and federal officials met in Ottawa on November 13, 1969 for a one-day Federal-Provincial Conference on Civil Emergency Planning.

Provincial cabinet ministers responsible for emergency planning and senior government authorities from all provinces and the northern territories met with the Hon. Léo Cadieux, Minister of National Defence who assumed responsibility for federal civil emergency planning in July, 1968, to review activities and future development of emergency measures/civil defence programs.

In addition to discussion on matters of interest to local governments the Conference dealt with current federal planning measures and proposals for future activities, provincial-federal planning responsibilities for wartime emergencies and peacetime disasters, federal financial contributions to provinces, civil-military cooperation in emergencies and other subjects related to planning for total defence of the nation..

The morning session consisted of formal presentations and brief relevant discussions on civilian and military appreciations of the current nuclear threat to Canada, civil-military cooperation in defence measures, and the national civil emergency measures program.

The afternoon session was devoted to free discussion between senior provincial officials and the Minister on the current position and future of civil emergency measures in Canada.

The following is the complete text of the Minister's statement delivered at the opening of the afternoon session:

## The Position of Civil Emergency Measures in Canada

*by*

*Hon. Léo Cadieux, Minister of National Defence*

You have heard today some observations concerning the threat which exists for Canada in this year 1969. I would now like to talk about Canada's response to the threat, as it applies to the civil actions as apart from the military activities involved in defence.

Canada has been carrying on an emergency measures program for a period of over twenty years and this program has intrinsically involved contemplation of the protection of the public, the continuing leadership and services that must be given to the public by government and the intelligent employment of existing resources for the proper management of the recovery of the nation from any attack.

Now, how far have we progressed? In addition to the activities of the federal government, there are ten provinces and two territories participating in civil emergency measures in Canada. In the federal field itself, some twenty departments and agencies have made emergency preparations part of their total planning.

As far as physical preparations are concerned, it is quite astounding to realize what has been done. An emergency communications network stretches across Canada from the Ottawa Area to all Provincial Emergency Headquarters areas. This is supplemented to varying extents in various provinces by provincial/municipal communications networks. There are protected sites for carrying on emergency government in six of the ten provinces. The other four provinces have interim Emergency Headquarters with communications arrangements and there is a central complex of protected sites in the capital area. The Canadian Forces have provided and man the federal and provincial Warning Centres and a warning network of sirens. The federal government has furnished, on a shared basis, some $2 million worth of radiation detection equipment which has been incorporated into a Municipal Fallout Reporting System.

While I could carry on at length concerning some of the less dramatic details of physical preparations, I would like to diverge here for a moment to discuss the Fallout Shelter Survey of large buildings which was completed in 1968 and the results of which have recently been distributed to the provinces. The information which now exists, permits the development of crash action shelter plans. The federal government is making arrangements to carry out the up-dating of this information.

Over the twenty years in which Canada has been actively engaged in civil defence or civil emergency measures activities, there has been a very real break at various points in which we graduate from what one might call an old approach to a new approach. The most recent break came at approximately the same time among all the allies who have significant emergency measures programs. This has been tied, in part at least, to financial difficulties that have beset most governments and possibly to a greater realization of the inherent capabilities of existing systems within our present economic and social structure.

During the past two years, the federal government

A view of the conference table.

has, for financial reasons, been forced to reduce support to civil emergency measures, but it has not done so without providing certain guidelines. It has deferred capital expenditures and capital construction. It has sought the reduction of emergency staffs with the purpose of maintaining a coordinating capacity in planning and also of encouraging emergency planning as a real part of everyday planning activities. It has indicated that training funds shall be used for the training of officials and experts, rather than for the training of groups of volunteers for general civil defence employment, and it has sought to ensure that no new expenditures are made for emergency arrangements, such as stockpiles of materials which are readily available from the existing resources in time of emergency. I am advised that officials, on the whole, have found that while the reductions have caused a certain degree of pain, nevertheless the necessity of getting along for the time being at least on reduced budgets has certainly clarified many issues. It has carved organizations down to a basic core of planners, a basic training arrangement of officials and experts and arrangements to use existing resources if they are needed in an emergency.

The government, at the same time as it reduced expenditures, charged the Canada Emergency Measures Organization with the responsibility of consulting with other government departments and with provinces and territories to determine the priorities as they should be dealt with in emergency measures, and also to evaluate what had taken place in the past, the value of what was going on, and the relative merits of proposals for the future. One of the most significant results of this was that it became apparent very shortly that to do a proper job of establishing priorities and evaluating programs, one had to have measurable goals. The subject of goals led naturally to the determination of what activities were involved, and the Minister of the day authorized the Canada Emergency Measures Organization to carry out an investigation in depth of the whole structure of civil emergency measures in Canada. We have, this morning, considered the major outcome of that study.

It seems to me that for the rest of our discussions we should turn our attention to the immediate future of civil emergency planning, and in particular to those parts of it which may cause you concern. In doing so, there are certain factors which I believe we should bear in mind.

First of all, I think we should remember that although Canada's participation with her partners should result in the possibility of attack being fairly remote, nevertheless it is possible that a chain of events could lead North America into a war situation.

Next, I am sure everyone here realizes by this time, that even though there should be a nuclear attack directed against North America, or indeed upon Canada itself, it is inevitable that a significant proportion of the population would survive uninjured.

Then, I cannot accept the idea that survivors would wish to be abandoned by their Government in a post-attack situation.

Finally, I would like to reiterate that our resources of manpower, materials, communications and manufacturing processes can be harnessed in such a situation to provide a basis of maintaining the population and of driving towards eventual recovery.

These matters pose a significant challenge to us. I would be the last person to claim that we can carry out all the preparations and develop all the pre-attack measures which we would like to do, with the funds which are at present available. Nevertheless, I believe that if we, as a group give these problems serious

thought, we shall arrive at the conclusion that there is much which can be done to enhance our state of national preparedness.

The making of plans is not an expensive process, and since for the most part emergency measures should be based on the extended use of all our national resources, we should be able to accomplish a good deal of preparation in this area. Furthermore, in an emergency one thing which usually cannot be bought is time. As sound planning is the beginning of all emergency preparations there is, therefore, no reason why we cannot make significant headway with the development of competent and professional plans. It is significant to remember that additional money will not necessarily lead to an enhanced state of readiness if adequate plans are not already in existence.

It has been indicated to you earlier in this Conference that the effects of an attack upon North America would have serious consequences upon the civilian population. (*see The Threat to Canada*). One of the responsibilities of all governments is, therefore, to develop measures which will afford the maximum possible protection to the public with the resources available. It is perhaps particularly fortunate that significant reductions in vulnerability can be effected at relatively low cost. I am convinced that one of the resources of which we must make the best possible use is the individual. Mankind is infinitely capable of imaginitive adjustment, but only if he is adequately informed as to what the problem is and how he can best meet it in conjunction with his fellow men. This naturally leads us back to the development of plans by which the individual may be adequately informed as to the various measures which he can take to protect himself and his family. I have already discussed the fallout protection survey of Canada and the capability it will help to produce. If we now add to this an effective system for offering guidance to the population and a public information system which will ensure that they are kept well informed, we shall have added considerably to our ability to survive an attack.

I believe that we can, all of us, offer sound and positive leadership to the citizens of Canada. It has been suggested to me that there is a considerable amount of complacency within the public towards civil emergency measures and that such guidance as may be offered is not well received. There are two thoughts which I would offer to you in connection with this. First, the complacency is not really an indifference to public survival, but stems from the belief among the great majority of the people that governments at all levels

**Post conference press conference**

Left to right are: Hon. E. H. Gerhart, Attorney General and Minister of Municipal Affairs (Alta.); Hon. R. E. Campbell, Minister without Portfolio (P.E.I.); Mr. J. N. D. McDonald, Deputy Minister of Municipal Affairs (Man.); Mr. C. F. Kennedy, Director EMO (N.S.); Mr. F. L. Wilson, Assistant Deputy Attorney General (Ont.); Hon. Léo Cadieux, Minister of National Defence; Hon. Rémi Paul, Minister of Justice (Que.); Hon. B. F. Nadeau, Minister of Municipal Affairs, (N.B.); Mr. L. J. Wallace, Deputy Provincial Secretary (B.C.); Hon. C. L. B. Estey, Minister of Municipal Affairs, (Sask.); and Hon. F. A. Frecker, Minister of Provincial Affairs (Nfld.). In the background Mr. C. R. Patterson, Director General, Canada Emergency Measures Organization and Mr. John Erb, British Columbia Provincial Civil Defence Coordinator.

should be, and are indeed, making the necessary preparations for their security and safety and that there is, therefore, little need for them as individuals to participate. Secondly, we have never found that the public is uninterested nor resistant to any approach which is made to them which is both logical and credible. Indeed it is our experience that it is this type of leadership which the people expect.

As I said, therefore, these matters pose a considerable challenge to us. The lack of funds which prevents us from carrying out all the positive measures which we would like, at the same time, places fairly and squarely on our shoulders as political leaders, the responsibility for ensuring that adequate planning is carried out at all levels and for providing leadership and guidance which is positive, credible and logical.

I would like to end with a statement concerning civil emergency planning for peacetime disaster situations. At the last Federal/Provincial Conference it was agreed that the emergency resources which were developed for wartime emergency could and should be used to cope with peacetime emergencies which were beyond the scope of the normal community resources. I must say that I am more than heartened by the fact that I have witnessed several occasions on which governments naturally turned to their emergency planning organizations for leadership and coordinating arrangements in a peacetime disaster situation. Additionally, I have been equally encouraged by the fact that Provincial Emergency Measures Organizations have often brought an immediate and effective response to the problems of a peacetime emergency situation, using men, preparations, resources and the information available to them as a result of their day-to-day civil emergency wartime preparations and arrangements.

There are provinces represented here today who have, over the years, by their own financial resources enhanced the capability of their Emergency Measures Organizations specifically to cope with the problems of peacetime disaster situations. Some may wonder why funds from the Financial Assistance Program of Canada EMO have not been made available specifically for this purpose. The federal government has taken the view that it contributes financially through direct support of disaster prevention works, such as the Greater Winnipeg Floodway. It has, as well over the years, contributed significantly to the sharing of the extra-ordinary operational costs of combatting major disasters. I reiterate, however, that the federal government assumes that any emergency capacity we thus develop for a war disaster, has a useable potential for peacetime catastrophies and that this capacity should be used, where suitable, in such emergencies.

I trust that these few words will serve as an introduction to a full discussion of our mutual purpose and the arrangements desirable to accomplish it. ▲

## SENIOR REPRESENTATIVES AT THE FEDERAL-PROVINCIAL CONFERENCE:

BRITISH COLUMBIA: Mr. L. J. Wallace, Deputy Provincial Secretary

ALBERTA: Hon. Edgar H. Gerhart, Attorney General and Minister of Municipal Affairs

SASKATCHEWAN: Hon. C. L. B. Estey, Minister of Municipal Affairs

MANITOBA: Mr. John N. D. McDonald, Deputy Minister of Municipal Affairs

ONTARIO: Mr. F. L. Wilson, Assistant Deputy Attorney General

QUEBEC: Hon. Rémi Paul, Minister of Justice

NEW BRUNSWICK: Hon. B. Fernand Nadeau, Minister of Municipal Affairs

NOVA SCOTIA: Hon. Percy Gaum, Minister of Welfare

PRINCE EDWARD ISLAND: Hon. Robert E. Campbell, Minister without Portfolio

NEWFOUNDLAND: Hon. F. A. Frecker, Minister of Provincial Affairs

FEDERAL: Hon. L. Cadieux, Minister of National Defence (Chairman)
Mr. D. W. Groos, Parliamentary Secretary to the Minister of National Defence
Mr. E. B. Armstrong, Deputy Minister of National Defence
Dr. J. W. Willard, Deputy Minister of National Welfare
Mr. G. W. Hunter, Deputy Minister of Supply
Mr. C. R. Patterson, National Coordinator, Civil Emergency Measures
Dr. J. C. Woodward, Assistant Deputy Minister of Agriculture
Mr. J. C. Morrison, Assistant Deputy Minister of Manpower and Immigration

## The Hon. Leo Cadieux greets:

Left:
Hon. R. E. Campbell, P.E.I.;

Center:
Hon. F. A. Frecker, Nfld. (left) and

Hon. Rémi Paul, Que.

Bottom:
Mr. F. L. Wilson Ont. In the background are Mr. C. R. Patterson, Canada EMO; and Mr. C. O. Gervais, Emergency Supply Planning Branch.

# HURRICANE CAMILLE – PART II

*The first half of this report by the United States' Office of Emergency Preparedness was published in the preceding edition of the Digest (October-November, 1969, Vol. 9 No. 5). The following chapters conclude the report.*

## Department of Health, Education and Welfare

DHEW quickly responded to Camille, both in the Gulf Coast and in the Virginias, dispatching special teams to all major trouble spots within 24 hours after the first reports of an emergency.

In the weeks that followed, the Department furnished well over $4,250,000 in materials and services to the stricken areas. Regional offices were authorized to draw on Public Health Service medical stockpile reserves and units of the Surplus Property Program. Using these reserves in the recovery effort, DHEW has supplied hundreds of thousands of items, such as 15,000 cots and blankets, disposable eating utensils, some 50,000 doses of typhoid vaccine, 1,000 bottles of insulin, 3,100 bottles of tetanus toxoid, over 100,000 doses of children's vaccines, 25,000 disposable syringes, and an undetermined number of refrigerated trucks, mobile toilet units and 50-kilowatt generators for emergency power requirements.

### U. S. Public Health Service

Prepositioned packaged disaster hospitals were put into operation to care for Camille's victims, and more such hospitals were sent to the Gulf Coast and affected parts of Virginia and West Virginia from adjacent areas. More than 100 public health officials, including sanitary engineers, assisted local health officials in recovery of sewer and water systems. Service physicians helped local doctors treat the injured. Food and drug inspectors cleared contaminated food and drug supplies and supervised burial of decaying animals by the Army Engineers. Epidemiologists and insect and rodent control specialists helped bring major health hazards under control. Working with members of the State Board of Health in the affected states, DHEW officials declared large areas potential health menaces and directed the removal of debris from private property to reduce harborage for rats and mosquitoes.

### Social Security Administration

SSA instituted emergency procedures to quickly settle claims for survivors. The Administration also took immediate action to ensure monthly checks to homeless beneficiaries dependent on them for survival.

### Office of Education

Disaster teams, comprising principally Office of Education engineers, have been dispatched to the Gulf Coast states and Virginia to assess damages to public schools.

## Department of Housing and Urban Development

On Friday, August 22, the Department was instructed by the Office of Emergency Preparedness to provide necessary emergency housing for Camille's victims. The following Sunday families made homeless by the storm and flooding started moving into mobile homes leased by HUD.

A total of 2,745 mobile homes were ordered by the Department, the leasing price to be reimbursed by the OEP, 2,050 for Mississippi, 495 for Louisiana, and 200 for Virginia and West Virginia. As of September 17, 952 families had been housed in Department-owned or leased homes—644 in Mississippi, 100 in Louisiana, and 208 in Virginia and West Virginia.

As of August 19, the Department had received 2,770 applications for emergency housing from state and local disaster representatives. DHUD officials estimated that the need for emergency housing in the three states was between 4,000 and 5,000 mobile homes.

After the hurricane, HUD engineers, together with state water pollution control teams, moved into the disaster areas to assist communities in restoring water and sewage facilities. The agency continued to provide assistance in the form of damage assessment to the Army Corps of Engineers for full restoration of water and sewer systems.

Long-term planning by the storm-damaged communities is under way. DHUD programs such as open space comprehensive planning, urban renewal, code enforcement, early land acquisition, loans, and low-rent public housing figure significantly in these plans.

# Department of Transportation

## Federal Aviation Agency

Camille closed the airport at Gulfport, but FAA and airport crews restored it within 16 hours. Lacking lights and navigation aids, air operations were confined to daylight hours. Within 48 hours, portable air navigation equipment was dispatched from Atlanta along with FAA technicians who installed it at Gulfport. Air control towers at Gulfport, Mobile, New Orleans and Jackson were knocked out of service for varying periods of time. Major air traffic control facilities at Laurel and Green County, Mississippi and Grand Owl, Louisiana also were put out of service.

Air traffic service demands in the Virginia area were heavy but FAA facilities were able to provide emergency service beyond normal duty requirements.

No estimate of funds expended or projected can be made as yet.

## U. S. Coast Guard

Fifteen Coast Guard aircraft and six vessels rescued 55 persons from immediate peril, evacuated another 140 persons, and assisted 39 vessels in distress. Coast Guard aircraft made 32 flights transporting and supporting representatives of other government agencies and made 13 emergency flights carrying urgently needed medical and relief supplies. More than 300 fixed aids to navigation and over 40 navigational buoys were destroyed, lost, or damaged. Normal vessel traffic has resumed in all channels.

No estimate of funds expended or projected can be made at this time.

## Federal Highway Administration

Damage to highways and roads was extensive, particularly in Virginia. Federal payments will be made for two categories—federal aid highways and for certain other roads.

Current estimates are:

| State | Federal Aid Highways | Other Roads |
|---|---|---|
| Virginia | $12,700,000 | $ 6,400,000 |
| Mississippi | 10,500,000 | 300,000 |
| Alabama | 1,150,000 | — |
| Louisiana | 300,000 | 50,000 |
| Grand total | $24,650,000 | $ 6,750,000 |

# Federal Deposit Insurance Corporation

The Corporation reports that losses by banks due to damage to properties serving as collateral for loans cannot as yet be measured. An estimate must await such developments as settlement of insurance claims and determination of the ability of bank borrowers to sustain such losses.

The FDIC has not found it necessary to provide financial assistance to insured banks in the disaster area. However, the Corporation has used Camille as a catalyst for the development of a more definitive and self-executing response to major disasters.

The FDIC Chairman said that the ability demonstrated by bankers in the disaster area to resume business deserves praise. In some instances, structural damage made it necessary to find temporary quarters with other businesses. For some banks, functions were curtailed to only those necessary, but late reports indicated a rapid return to complete banking services.

# Federal Home Loan Bank Board

The Federal Home Loan Bank Board approved measures to provide liberalized credit for member savings and loan associations in the affected areas.

The FHLBB also recommended leniency in the case of borrowers unable to meet contractual obligations owing to the disaster.

# Federal Power Commission

The Commission's role during the Camille recovery effort consisted primarily of monitoring reports of repair activities by electric utilities and natural gas firms in the affected areas, and sending this information to OEP.

The major problem encountered was inadequate initial communications with utilities in the disaster area.

The Southern Company reported to the FPC in Washington mid-morning August 18 extensive damages to public utilities in Biloxi, Gulfport, Pass Christian and Bay St. Louis. The FPC also initiated contact with Virginia Electric Power Company and Appalachian Power Company to determine preventive and restorative measures taken in Virginia.

The Alabama Power Company in Birmingham, as requested by FPC, airlifted a 250-kilowatt generator to the Gulfport Veterans Administration Hospital, thus providing power until commercial service was restored four days later. This is only a single example of the prompt actions which characterized the electric utility industry's response to the emergency.

Of the seven major natural gas interstate pipeline companies in the disaster area, three suffered damages to their facilities, causing significant interruptions of production and distribution in the area.

Over-all, deliveries to municipal customers have been restored to about 85 per cent of normal demand. Service to Biloxi, Mississippi has been 90 per cent restored; service to Pass Christian, almost totally destroyed, has been only 10 per cent restored.

## Federal Reserve System

The Federal Reserve System activated emergency procedures to ease restrictions on credit needs of bank customers engaged in reconstructing the disaster area.

Under arrangements established by the System's Board of Governors in Washington, the Federal Reserve Banks of Atlanta and Richmond, whose districts encompass the disaster areas, were authorized:

— To relax penalties on member banks for failure to maintain required reserve balances; and

— To make appropriate credit available to disaster-area banks to help them meet emergency conditions.

## General Services Administration

The Federal Building in Laurel, Mississippi began housing refugees August 17.

On August 18 an initial shipment of 125 generators was made to Gulfport and Biloxi, along with 3,000 sheets, blankets, and pillow cases, 5,000 cots, 10,000 sanitary facilities, flashlights, batteries, and disposable eating utensils.

Subsequent shipments included: vehicles and trucks for the Corps of Engineers and others in support of disaster operations; two refrigerator truckers to the Veterans Administration Hospital in Biloxi to replace a malfunctioning cold storage area; medical supplies, including alcohol, insulin, cotton, tetanus toxoid, and surgical masks, to state and county medical authorities; 5,000 additional blankets to Hattiesburg, Mississippi for refugees; and building materials, tools, equipment for food services, and bags for human remains to all sectors of the disaster area.

Logistical support by GSA is estimated to be in excess of $500,000. A single Administration depot shipped 176 tons of equipment and supplied valued at $205,562 to the disaster area.

Salvage and restoration of records was conducted with officials of the State of Mississippi, and office space was leased to the Small Business Administration.

GSA telecommunications experts were sent to the Gulf disaster area to help restore communications facilities; arrangements were made to extend the Federal Communications System to emergency operating centers.

## Interstate Commerce Commission

Commission field offices processed many requests by motor carriers for temporary authorities to transport fuel oil and other emergency supplies.

Owing to destruction of portions of U.S. Highway 90 along the Gulf Coast, motor carriers transported freight on alternate routes; several carriers issued embargoes because of their inability to serve affected areas. Railroads also were seriously disrupted but continued to operate by using existing open routes, regardless of ownership.

In Virginia, two railroads were granted rerouting orders by the ICC because of severe damage to their own tracks. Serious interstate highway damage in that state also caused deviation from regular routing to remaining open highways.

## National Aeronautics and Space Administration

The Mississippi Test Facility (MTF) and Michoud Assembly Facility (MAF) are located in the Camille disaster area and, after protective preparations on-site, both installations provided substantial assistance to local authorities and disaster victims. The Marshall Space Flight Center (MSFC), adjacent to the disaster area, was involved in the recovery effort, as was the Kennedy Space Flight Center in Florida, which airlifted to the Gulf Coast some 16 tons of foodstuffs, clothing, bedding and other supplies, including typhoid vaccine.

### Marshall Space Flight Center, Huntsville

When the Marshall Center learned of the disaster at MTF and MAF, Dr. Werner von Braun sent disaster teams and material to assist in emergency operations in the affected areas. Medical, communications and logistics personnel flew to MTF on August 19. At the same time, a 200-bed Civil Defense packaged disaster hospital, auxiliary power generators, engine fuel, potable water and other essential supplies were being trucked into Pass Christian. MSFC expended about $40,000 in this operation.

### Mississippi Test Facility, Bay St. Louis

As Camille slammed ashore near Bay St. Louis, some 1,060 evacuees, primarily from the coastal cities, were sheltered at MTF. The Facility escaped the expected severe damages from Hurricane Camille, and thus was able to immediately assist local communities. Heavy equipment—cranes, loaders, bulldozers, and trucks—was dispatched to the affected areas. Food service was provided both on and off-site. NASA/MTF also acted as a storage and clearing agency for food and clothing donated by various agencies, localities and individuals for Camille victims. About 50 tons were handled during a one-month period.

The emphasis over the first three days was search and rescue. The MTF maintained 24-hour communications with the devastated area, filling requests, where possible, for food, water, clothing, and similar critical supplies. On Friday, August 22, "Operation Inland" was initiated to check by car and aircraft the small communities on the inland path of the hurricane. By Tuesday, September 2, normal mission operations were reestablished. MTF's projected expenditure for Camille recovery is slightly over $2 million.

### Michoud Assembly Facility, New Orleans

Requests for relief from adjacent communities were heavy and most MAF participation was channeled through the Hurricane Disaster Control Center at the Mississippi Test Facility. Actions by MAF included furnishing a medical relief team for emergency medical services and innoculations; transportation for work crews, food, equipment and medical supplies; evacuating hospital patients; establishing communications; evacuation of victims to up-state shelter areas; and assistance in site restoration services, including salvaging of household goods and personal effects. Projected cost for MAF is $166,000.

## Office of Economic Opportunity

At the request of Governor John Bell Williams, the president of the Mississippi bar association and the state attorney general, the Office of Economic Opportunity on August 22 provided an emergency grant of $50,000 to provide legal services for poor victims of the hurricane in eight affected Mississippi counties.

Mississippi officials requested the funds, they said, because they were concerned that the legal rights of the poor should receive immediate attention and protection.

As a result of the grant, low income victims in Harrison, Forrest, Jackson, Marion, Lamar, Pearl River, Stone and Hancock Counties are receiving legal assistance in dealing with the losses caused by the hurricane.

## Railroad Retirement Board

Railroad retirement benefit checks dated September 1 were released to the Post Office Department in Chicago two days early, to ensure timely distribution in the disaster area.

Although the Board has offices in all states struck by Camille, the operations of only one—in Mobile, Alabama—were affected. Despite a loss of electric power, the manager kept the office open and conducted some business.

## Selective Service System

All orders to report for physical examination or induction for September and October were cancelled as the affected registrants were deemed more essential to the reconstruction effort. The Mississippi state director determined that there should be no finding of delinquency due to failures and/or difficulties in the communications and postal services.

Virginia and Louisiana continued their normal operations under very difficult circumstances.

All costs involved have been absorbed by the System

## Small Business Administration

Since Camille slammed the Gulf Coast and dumped torrential rains on portions of Virginia and West Virginia, the SBA has been contacted by more than 15,500 home owners, renters and businessmen in Florida, Alabama, Mississippi, Louisiana, Virginia and West Virginia. Loan applications have been provided to 6,930 firms and individuals.

Through September 13, the Administration received 1,194 completed applications—1,020 for disaster home loans amounting to $7,049,961; 174 for disaster business loans amounting to $5,245,805. During the same period, 407 home loans were approved for $2,035,440, and 41 business loans were approved for $513,400.

More loans were expected as victims made final decisions for restoration or rehabilitation.

## Civil Service Commission

About 5,000 federal employees are in the immediate area affected by Hurricane Camille.

The Executive Officer of the Interagency Board of Examiners for Mississippi and one staffing specialist set up offices in the Mississippi State Employment Office at Gulfport to assist in the recruitment of 250 temporary employees for the Navy Construction Battalion Center. As of September 5, all but a few of the people needed had been hired and the Gulfport branch of the Interagency Board of Examiners was closed.

Federal agencies took immediate steps to reassign employees who could not report for duty to their regular installations. Employees of the destroyed post offices at Pass Christian and Waveland were assigned work in the Gulfport and Bay St. Louis Post Offices. All but a very few of the 600 employees of the Gulfport VA Hospital, which was damaged severely, were transferred to the VA Hospital at Biloxi.

The funds expended by the Commission in responding to this disaster are estimated to be $1,300. No additional expenditures are expected.

## Veterans Administration

Efforts by the Veterans Administration to alleviate the suffering caused by Hurricane Camille have been extended to thousands of veterans, VA employees from the area and others caught up in the disaster.

Since communications and mail services were seriously disrupted, Post Office and Treasury officials worked out plans with the VA to speed delivery of checks to veterans who depend on VA pension and compensation payments and to VA employees.

VA employees in various parts of the country initiated drives to assist fellow employees and others victimized by the disaster.

The two VA hospitals buffeted by the hurricane were at Biloxi and Gulfport. Biloxi, though damaged, managed to stay in operation while Gulfport had to be evacuated of 729 patients.

VA medical teams comprising doctors, nurses and nursing assistants came from VAHs at Jackson, Mississippi, and New Orleans. They assisted at the Biloxi VAH and local community hospitals, established four first aid stations in the Biloxi area and helped immunize victims to prevent epidemic.

The VA hospital at Richmond, Virginia set up a health center for victims of the flood damage Camille dealt to that part of the country, admitted five victims and provided first aid to 22 others.

In the Pass Christian and Gulfport-Biloxi areas, where some 8,500 G.I. loans have been approved by the VA since the end of World War II, veterans whose homes were damaged as a result of Hurricane Camille were urged to contact the VA for assistance.

In cases where damaged homes were being financed by VA guaranteed loans, the VA assists veterans in collecting their insurance and in dealing with private lenders who hold the mortgage. Where the VA has made direct loans, it worked directly with insurance companies and, when necessary, suspended mortgage payments.

Vacant homes owned by the VA were offered to flood victims and to relief agencies assisting victims; for example, four such houses were turned over to the Slidell, Louisiana Chamber of Commerce for six months for $1 a month.

Forty-eight other VA-owned homes were made available—six in or near New Orleans; two that escaped damage on Mississippi's Gulf Coast, and 40 at Mobile, Alabama.

## American Red Cross

Red Cross disaster specialists and volunteers are well into the rebuilding and rehabilitation phase of the disaster relief operation.

More than 26,000 families in Louisiana, Mississippi, Alabama, Virginia and West Virginia were registered

(*Continued on page 26*) **HURRICANE**

# CIVIL DEFENCE IN FINLAND*

Civil Defence or—as it is called in Finland—Population Protection of Finland was subordinated to the armed forces during the war years from 1939 to 1944, and at that time, as a part of the armed forces, it was called "Air defence".

At the end of the war, Civil Defence first of all called a halt to its activity. Not until the fifties were serious measures planned and worked out for Civil Defence. The Civil Defence Law, which came into force in the summer of 1959, and the provisions of May 22, 1959, with regard to Civil Defence, which were approved in 1963, provided the basis for the present Civil Defence.

The aim of Civil Defence is to protect people and property against threats arising from a war or other circumstances linked with it, as well as to limit, the damage ensuing and mitigate the war's effects. Its most important spheres of activity are: general Civil Defence, protection of authorities and public services, Industrial Civil Defence and individual protection (self-protection).

In Finland, Civil Defence comes under the Ministry of the Interior. The activity fields of planning, organization, equipment and training are dealt with by a department of the Ministry of the Interior, which also includes the state Civil Defence schools. A special commission, to which experts in various specialized fields belong, assist the Ministry in dealing with all matters pertaining to Civil Defence.

On the regional level, Civil Defence is directed and supervised by a district chief. Special Civil Defence inspectors are entrusted with the specific Civil Defence tasks in the governmental districts. It is worth mentioning that the activity spheres of fire-fighting, police, and—for the present—the health service are under the Ministry of the Interior as well as the district chief.

On the local level, Civil Defence tasks are carried out by the local authorities and their services. About 130 areas in the country have until now been designated as protection zones. This means that radical Civil Defence measures are taken here. The other, without exception very thinly populated parts of the country, form so-called guard areas. In every protection zone, a Civil Defence commission functions, assisted by a Civil Defence chief or instructor.

In work-plants, industrial enterprises and business firms, Civil Defence measures are carried out by the enterprise management or its equivalent.

Self-protection of the population, which should be considered as a complement to general Civil Defence in the community, is directed by a protection supervisor.

*(Translated from "Zivilshutz—Protection Civile", Swiss Civil Defence Union)

## General Civil Defence

There is, however, a considerable difference between the tasks which are to be carried out during the preparation for and in war, and those which fall to the organization and direction of population protection in peace-time. Organization within the Ministry of the Interior is in the latter case undertaken by the Civil Defence Director. The direction service under his control includes the Civil Defence divisions as well as the Fire-fighting division.

The district chief is always the competent regional leader. On his behalf, the Civil Defence chief carries out the tasks of leadership. Mobile leadership units are employed to assist the district chief when necessary in taking protective measures in disaster areas. Each district disposes of one to three leadership units. Altogether, 22 such units exist at present in the Republic of Finland. Each mobile leadership unit comprizes 27 members.

In built-up areas, Civil Defence is directed by the local Civil Defence centre. The Civil Defence chief is assisted by leading forces from the different service spheres, which, however, all belong to the municipal administration. The staff of a centre comprizes 14 persons.

The protection zones are divided into protection sectors, which in larger zones can be grouped together into protection districts. The protection zone is under a protection chief, who is assisted in his work by a protection service comprizing five persons. Protection sectors and protection districts have their own services.

Municipalities in guard areas are divided into guard districts, which, when necessary, are subdivided into guard sectors. So-called protection services direct the measures which have been foreseen. A Civil Defence centre can, however, directly control a district.

## The various fields of activity

The general protection service units are stationed partly within the municipal area and partly outside it, according to local conditions, and they are always under the control of the Civil Defence centre. They are divided into groups, detachments and companies.

The *locating service* has the task of determining danger and damage areas—also in the case of contamination by radioactive fallout and gas—and precise the kind and extent of the damage. The locating group, consisting of four persons, also controls food and water. The *rescue service* has the task of searching for injured in damage areas, of sheltering them and applying first-aid. A rescue group consists of eight persons. The

*health service* applys first-aid, sorts out the injured into urgency groups, decontaminates them if necessary, and transports them to treatment centres. The local Civil Defence medical officer also directs the health service of local Civil Defence. A first-aid group consists of a group chief and six to eight men or women. *Fire service* groups comprize eight persons each. The *decontamination service* is responsible for decontaminating equipment and the ground. Its operation group consists of eight persons.

With a third of their equipment, Fire, Rescue and Health services of the community are also called upon to give assistance in neighbouring communities. In the event of disaster, the local units of Civil Defence are assisted by regional long-range intervention columns. At present, 15 detachments and 13 regional fire-fighting companies are available to this end.

## Industrial Civil Defence

Industrial Civil Defence in Finland comprizes industrial protection and the surveillance of enterprises as well as psychological protection of employees. In putting these measures into effect, the basis of peacetime planning is taken, inasmuch as industrial protection measures, fire-fighting and surveillance are concerned. From the organization point of view, the enterprise management works together with the police and military authorities with regard to surveillance measures.

## The voluntary organizations

Finland's Civil Defence Union achieves exemplary protection work. Its special task is training the population in self-protection; in addition, it assists in local training activities. The local Civil Defence associations, a Civil Defence school and the instructors belong to its organization. The first-aid staff for Civil Defence is trained by the Finnish Red Cross. In preparing measures to be applied to industry and trade within the framework of Civil Defence, the Civil Defence directorate for industry and trade works together with the authorities and the other organizations.

## Warning and alarm systems

An information network covering the whole of Finland enables the population to be warned at the right time. The following signals are provided for: air warning—radiation warning; air alarm—radiation alarm. In addition, information on possible danger from aircraft and on radiation protection will be issued when necessary.

An air warning concerns either the area of a whole district or the area covered by several municipalities. In general, the population is not informed, but the local direction services of Civil Defence inform certain, particularly important enterprises. A radiation warning concerns all areas, which are presumed to be in possible danger of radiation. The population of these areas are also informed.

In the case of an air alarm, the population is warned by means of the Civil Defence centre of the protection zone. With indirect radiation danger, the radiation alarm is given to all municipalities. In this case, the population is also informed immediately.

All information on danger from aircraft and on radiation protection are always transmitted to the local Civil Defence centre. To this end, the plan has been made to use radio communications, in this case the relay station network of the district and the extra-short-wave network No. 1 of the radio. Both plants are to be extended accordingly with a view to this. The following signals are given by the sirens in the protection zones:

- — General alarm signal: everyone must immediately take cover.
- — Radiation alarm: preparative measures for protection against radioactive fallout must be taken.
- — All clear signal: it annuls the warning and alarm signals given before.

In connection with a radiation warning, additional details and further instructions are transmitted. To this end, the information heard by radio relays must be prepared and guaranteed. In the case of radioactive fallout or danger of gas-poisoning, the state of alarm can not be lifted everywhere at the same time. The information in this connection are then transmitted by telephone or loud-speaker vehicles.

## Evacuation

In Finland, there are four different kinds of evacuation: 1) population evacuation; 2) regional evacuation; 3) removing; 4) other evacuation. A "*population evacuation*" concerns first of all the protection zones; it is carried out as a preliminary evacuation or as a rapid evacuation. The preliminary evacuation should be carried out as a safety measure, if a relatively large amount of time, for instance 24 to 48 hours, can be disposed of. About 50 per cent of the inhabitants of the protection zone, children under 16 years of age with their mothers, and old and sick people with their attendants, are evacuated in advance to the planned welcoming communities. Rapid evacuation means that the population must be removed in a very short time to temporary reception areas, which are outside the protection zone, and from where transportation to settlement zones is carried out.

"*Regional evacuation*" is a displacement of the population, including domestic animals and movable property, from the endangered areas to safe areas.

A "*removal*" is a displacement of the population and domestic animals from such areas as may be afflicted by radioactive fallout or other damage.

"*Other evacuation*" applies to industrial enterprises, public works and institutions as well as economic

(*Continued on page 26*) **FINLAND**

# STATUS OF U.S. CIVIL DEFENCE PROGRAM

*The following extracts from the status report dated April, 1969, highlight current emphasis and developments in the United States' civil defense program.*

## Focus Today

Based on extensive Defense Department studies on the role of civil defense in the national security structure, and on an exhaustive Congressional study of civil defense objectives, emphasis today is on the development of a nation-wide fallout shelter system through dual-purpose use of available resources, public and private. This includes locating with precision the fallout-protected space inherent in tens of thousands of existing larger structures throughout the Nation, and promoting the incorporation of fallout shielding features in new structures in the design stage. It is not a "shelter construction" program in the normally accepted meaning of that term but rather a systematic fact-finding process, the object of which is to locate fallout protection available in structures—from skyscrapers to private dwellings—and make this information available to those who would need it in an attack emergency.

The development of support systems to the national shelter system is another major element of the national civil defense program. These include systems for public warning, communications, radiological monitoring, and emergency public information. The training and education of government personnnel and out citizens in measures for survival under attack is still another basic element of the program.

## National Fallout Shelter Survey

The National Fallout Shelter Survey was started in late 1961 to locate potential public fallout shelter space in large structures—space meeting DoD shelter standards and which would accommodate 50 or more persons in the event of attack. By April 1969, this survey had located potential public fallout shelter space for 187,000,000 people in nearly 195,000 structures throughout the Nation. Owners of nearly 109,000 buildings, containing space for more than 104,000,000 people, had voluntarily authorized the placement of the black and yellow public fallout shelter sign on their buildings to mark them for use as public fallout shelters in event of attack. More than 95,000 buildings with shelter space for nearly 94,000,000 people had been stocked with austere supplies (including food, medical and sanitation supplies, and radiological instruments) provided by the Federal Government. These are frequently supplemented by water, food, and other resources normally present in some buildings designated as public fallout shelters.

In addition, the national survey identified fallout protection in smaller buildings, other than private homes, that might accommodate 10 to 50 persons in the event of attack. This portion of the survey, which is being conducted where additional shelter is needed, in phase with the Community Shelter Planning Program, has located PF 40 or better space for more than 2,500,000 people.

## Home Fallout Protection Survey

Surveys are also being extended to private homes. This survey is aimed at the over 29,000,000 U.S. homes with basements. Unlike the surveys of large buildings, where about two-thirds of the fallout shelter space is located in aboveground areas, studies show that in small buildings, such as private homes, significant fallout protection exists only in belowground, basement areas.

By the end of 1968 home surveys had been completed in the District of Columbia, in two New York counties. Fallout protection of PF 20 or better was located by these surveys for −29.8 million occupants of 8.6 million homes. Over 1.8 million of these shelter spaces were PF 40 or better, and data indicate that more than 97 percent of the balance can be brought up to the PF 40 standard through minor improvements by the householder himself.

## Emergency Operating Centres

Government officials need Emergency Operating Centres protected centers with necessary communications, for the use of key State and local officials in directing emergency operations. There were 2,465 EOC's in operation and 539 in preparation by April 1969. Many are manned day and night in peacetime by regular elements of government with public safety assignments.

## Emergency Broadcast System

Actions are being taken to tie Emergency Operating Centres to the Emergency Broadcast System—a system managed by the Federal Communications Commissions in cooperation with the broadcasting industry to provide the public promptly with verified information in an attack emergency. As part of this system, Office of Civil Defense established a Broadcast Station Protection Program to provide fallout protection, emergency power where needed, and radio links between EOC's and key EBS stations—to make it possible for these stations to stay on the air in a fallout environment and to provide authoritative national coverage. Currently, 618 radio stations are a part of this protection program.

## Radiological Monitoring

A system, consisting of more than 67,000 monitoring locations with instruments and trained personnel, has been established primarily at fire and police stations, airports, hospitals, and the field offices of States and Federal agencies. In addition, more than 100,000 public shelter facilities have been equipped with radiological detection and monitoring instruments.▲

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**HURRICANE** (*continued from page 22*)

for Red Cross recovery assistance, and the number is expected to reach 28,000. Rehabilitation help for these victims of Camille is expected to increase the cost of the relief operation to more than $20 million, making this the second largest disaster operation in Red Cross history. The 1937 Ohio-Mississippi River flood relief program cost the Red Cross $25 million.

This long-term Red Cross assistance is given to families who lack the credit or other resources to finance their own recovery. It includes rebuilding or repairing and refurnishing of owner-occupied homes; replacement of occupational tools and other equipment, nursing and medical care, and helping meet normal living expenses until the families' homes and means of livelihood can be reestablished.

According to present estimates, this recovery help will cost up to $17 million, in addition to expenditures already made by the Red Cross for mass care and other emergency measures. Building and repair expenditures are expected to exceed $7.8 million; replacement of household furnishings $6.6 million; replacement of tools and equipment $390,000; family maintenance $2 million, and medical and nursing care $250,000.

As part of the rebuilding operation, some 6,600 members of the AFL-CIO affiliated building trades unions in Louisiana donated their services for six successive weekends to build 150 or more homes for hurricane victims in Plaquemines Parish, Louisiana. The Red Cross provided building materials for the project.

During the days immediately after the disaster, the Red Cross gave mass care to more than 230,000 persons in the five states affected, feeding some 100,000 disaster victims and emergency workers daily.

Throughout this relief operation, the Red Cross has had the close cooperation and assistance of the Office of Emergency Preparedness, Small Business Administration, all branches of the military, Civil Defense, state and local authorities, and organized labor.▲

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**FINLAND** (*continued from page 24*)

concerns, which are displaced from endangered areas to such zones as allow work to be carried on.

The local welfare authorities are responsible for the evacuees and their property, which is displaced to the settlement zone. The Civil Defence authorities direct the preparations and the execution of evacuation. During the execution of these measures, the Civil Defence organization is reinforced if necessary.

## Shelters

In 1967, there were shelters for one million people in Finland. There are 170,000 places in the public shelters of the protection zones, but the majority of shelters are provided by private shelters, the so-called yard-shelters. The yearly increase is stated as being 100,000 places.

All expenses for public shelters are to be borne by the state or the municipalities. In peacetime, the public shelters are used for economic purposes; they must, however, be able to be emptied and prepared within 24 hours for protection usages. Private shelters are built in protection zones; they are set up in stone buildings with a surface of at least 3,000 m², and the cost is born by the houseowner.

## Staff and its training

In the event of war or when danger threatens, each Finnish citizen between 16 and 65 years old are obliged to take part in Civil Defence. The only exceptions are the citizens who are called up for the armed forces.

Municipal and state officials as well as civil servants are bound to undergo training in Civil Defence already in times of peace. Voluntary staff can also be trained. Staff training for direction and special tasks comprizes 36 hours of training at the most per year. In 1967, for instance, 1200 people received such training.

Altogether, about 400,000 people belong to the Civil Defence organization in Finland. Out of these 400,000 people about 140,000 are at the disposal of the general Civil Defence, about 20,000 at the disposal of the protection of authorities and official institutions, and 50,000 at the disposal of industrial protection. The others, who are all trained in self-protection, form in a certain measure a reserve.▲

# U. S. S. R. CIVIL DEFENCE AWARDS

*The following item appeared in the USSR monthly magazine Soviet Military Review dated June 1969.*

The Civil Defence system is successfully functioning in the Soviet Union. It was formed on the basis of the local anti-aircraft defence units (LAD) which, as a centralised and All-Union organisation, existed from the beginning of the 1930's. During the Great Patriotic War of 1941-45, the personnel of the LAD units extinguished 10,000 fires, prevented 32,000 major accidents, restored 15,000 buildings, 87 large industrial enterprises, rendered harmless over 2.5 million unexploded bombs, mines and shells.

Nowadays the Civil Defence is a state system of defensive measures to be carried out both in peace and war for preparing the population and the economy against attacks with nuclear-missile and conventional weapons.

Recently Marshall of the Soviet Union V. Chuikov, Chief of the Civil Defence, issued an order instituting new decorations instead of the old ones.

**Honorary Civil Defence Badge** is the Civil Defence highest award. It will be awarded to higher command and leading personnel of the Civil Defence of the union and autonomous republics, territories and regions, union and union-republican ministries, generals and senior officers of the Civil Defence who have displayed skill in directing and organising the fulfilment of the assigned missions and activities and who have worked in the system at least two years.

The right to award this badge belongs to the Chief of the Civil Defence of the USSR.

**Excellent Member of the Civil Defence.** This badge is awarded for excellent discharge of duties and active work to Civil Defence command personnel in the cities, districts, enterprises, institutions and educational establishments, servicemen and civilian employees of the Civil Defence staffs and institutions, and to lecturers and teachers of higher and secondary educational establishments, students and pupils for excellent knowledge of the training programmes and mastering of their speciality.

Only persons with a service record of not less than two years in the Civil Defence are awarded this badge.

The right to award this badge belongs to the Chief of the Civil Defence, his deputies, Chiefs of the Civil Defence of the union and autonomous republics, territories and regions.

**Ready for Civil Defence of the USSR.** This badge is awarded to sergeants and soldiers of Civil Defence formations and units. Pupils of secondary educational establishments are also awarded this badge for excellent mastery of the programme, skilful actions on receipt of Civil Defence warnings and in rendering mutual aid to victims.

This badge is awarded by the Chiefs of the Civil Defence of districts and cities, unit commanders and higher authorities of the Civil Defence. ▲

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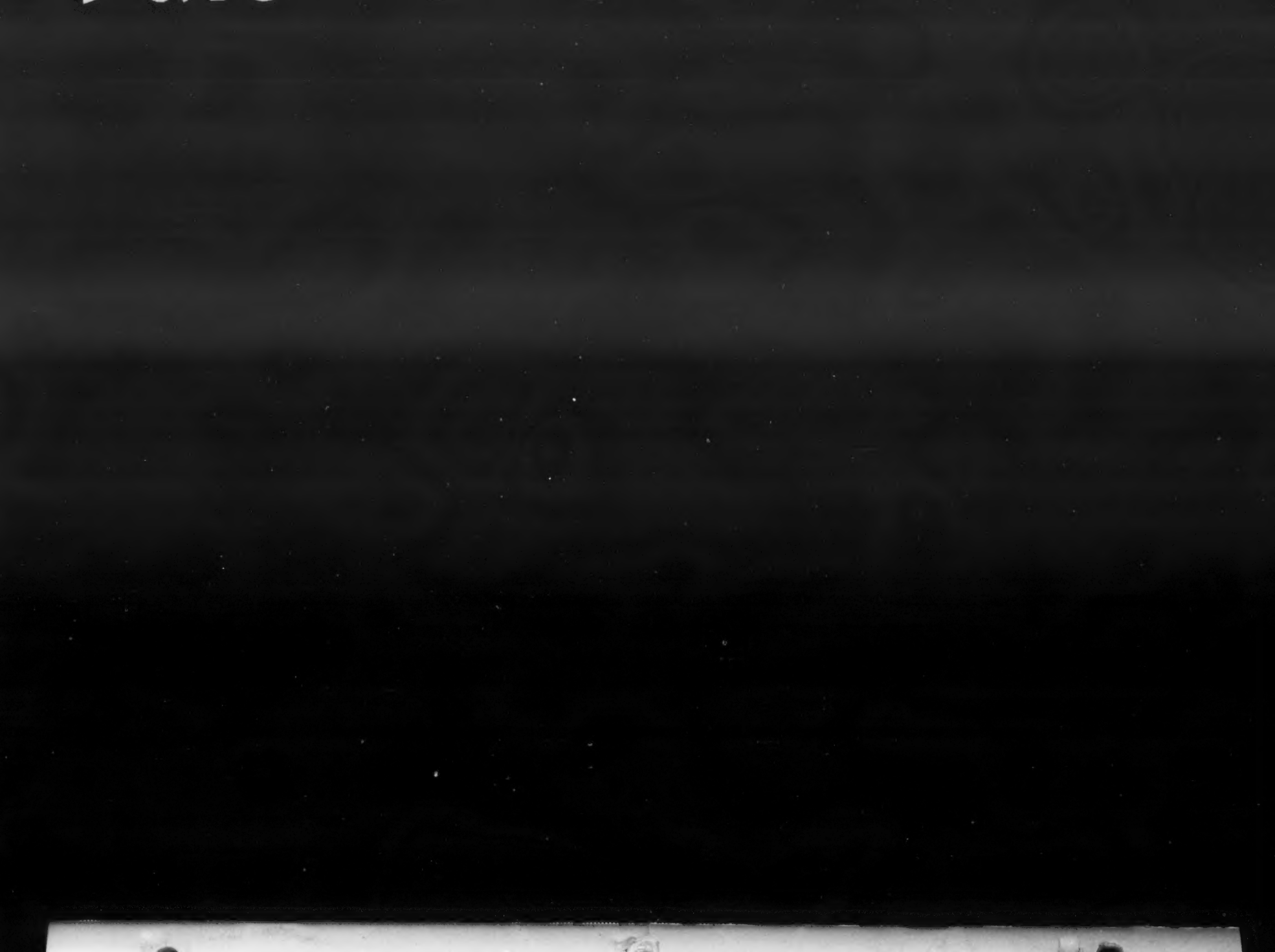
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